

What is Organic Nomenclature?

Worksheet

Organic nomenclature uses IUPAC rules to systematically name compounds based on their longest carbon chain (parent), functional groups (suffixes), and branches (prefixes). For example, CH₃CH₂CHOH is 1-propanol (propane chain with -OH group at position 1).

Questions

- CH₃CH₂CH₂CH₃ is named
 - butane
 - propane
 - pentane
 - 2-butane
- In IUPAC naming, which rule takes priority?
 - Longest chain
 - Lowest functional group number
 - Alphabetical order of substituents
 - Lowest number for first substituent
- CH₃CH(OH)CH₂CH₃ is
 - 1-butanol
 - 2-butanol
 - 3-butanol
 - 2-methylpropanol
- CH₃-CH₂-CH(CH₃)₂ (two methyls on the same carbon)?
 - 2-methylpropane
 - 2,2-dimethylpropane
 - 3-methylbutane
 - pentane
- Name the compound: CH₃CH₂CH(OH)CH₃
- Name: CH₂=CHCH₂CH₃
- Name: CH₃CH(Cl)CH₂CH₃
- Define: What does IUPAC stand for?
- Define: General format of IUPAC name?
- Define: What's a parent chain?

Answer Key

1. A) butane - 4 carbons in chain = butane (no functional group, no branches).
2. B) Lowest functional group number - Functional group (alcohols, ketones, etc.) numbering takes priority over other features.
3. B) 2-butanol - 4-carbon chain with -OH at position 2: 2-butanol.
4. B) 2,2-dimethylpropane - 5-carbon total with two methyls on the same carbon (position 2): 2,2-dimethylpropane.
5. Functional group: -OH (alcohol) Longest chain: 4 carbons (butane) Number from end closest to -OH: position 2 Name: 2-butanol (or sec-butanol)
6. Functional group: C=C (alkene) Longest chain: 4 carbons (butene) Number to give double bond lowest number: position 1 Name: 1-butene (or but-1-ene)
7. Functional group: Cl (haloalkane) Longest chain: 4 carbons (butane) Number to give Cl lowest number: position 2 Name: 2-chlorobutane
8. International Union of Pure and Applied Chemistry - the organization that standardizes nomenclature.
9. [prefix][parent chain][suffix] - e.g., (2-methyl)(pentane) or (2,3-dimethyl)(butane).
10. The longest continuous chain of carbon atoms in the molecule - determines the base name (methane, ethane, propane, etc.).

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